

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Expanding Flexible Use of the 12.2-12.7 GHz Band)	WT Docket No. 20-443
)	
Expanding Flexible Use in Mid-Band Spectrum Between 3.7-24 GHz)	GN Docket No. 17-183
)	
MVDDS 5G Coalition Petition for Rulemaking to Permit MVDDS Use of the 12.2-12.7 GHz Band for Two-Way Mobile Broadband Service)	RM-11768 (Terminated)
)	

REPLY COMMENTS OF AT&T SERVICES, INC.

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I. INTRODUCTION AND SUMMARY

AT&T Services, Inc. (“AT&T”), on behalf of DIRECTV Enterprises, LLC (“DIRECTV”) and its other affiliates, submits these comments on the Federal Communications Commission’s (“Commission” or “FCC”) Notice of Proposed Rulemaking (“*12 GHz NPRM*”) in the above-referenced proceeding, which seeks comment on the efficient use of the 12.2-12.7 GHz (“12 GHz”) band.¹ In the *12 GHz NPRM*, the Commission made clear that it would only permit new terrestrial uses in the band if the record was clear that this could be done without causing interference to incumbent operations, including Direct Broadcast Satellite (“DBS”) services, non-geostationary satellite orbit fixed satellite service (“NGSO FSS”), and their

¹ See *Expanding Flexible Use of the 12.2-12.7 GHz Band, et al.*, Notice of Proposed Rulemaking, Docket Nos. 20-443 and 17-183 (Jan. 15, 2021) (“*12 GHz NPRM*”).

respective customers.² Based on the record developed in opening comments, it is clear that the Commission must stay the course and not permit new services in the band.

Over the course of this proceeding, AT&T and others have emphasized that no advocate of introducing flexible terrestrial uses in the 12 GHz band on a co-primary basis with incumbent services has demonstrated with any technical or analytic rigor that these services can operate without causing harmful interference to incumbent satellite services. The record developed in opening comments affirms this, as most commenters believe it is not possible for a flexible terrestrial service to operate in the 12 GHz band on a non-interference basis to incumbent satellite service. Meanwhile, those who bear the burden of proving that coexistence is possible continue to fall short when making their case. MVDDS commenters³ have failed to substantiate their protracted claims that these new terrestrial services can coexist with incumbent services in the 12 GHz band. This effort was particularly lacking with respect to the proposed services' ability to protect incumbent DBS services, analysis of which was regularly omitted or given short shrift. Indeed, DISH even elected to resubmit five year old studies to support its claims of coexistence with DBS despite numerous challenges to the veracity of those same studies in the record and the proponents' own statements that advancements in technology have rendered the analysis stale and deficient.

² *Id.* at ¶ 2.

³ For purposes of clarity, in these Reply Comments AT&T uses the term "MVDDS incumbents" to refer to the eight companies that hold active MVDDS licenses and the term "MVDDS commenters" to refer to the six MVDDS incumbents who filed comments in this proceeding. The term "MVDDS Licensees" will be used when discussing the joint submission of Go Long Wireless, Cass Cable TV, Inc., Story Communications, LLC, and Vision Broadband, LLC (who collectively refer to themselves as the "MVDDS Licensees" in their filing). Comments of the MVDDS Licensees, WT Docket No. 20-443, at 1 (May 7, 2021) ("MVDDS Licensees Comments").

In making their failed case for coexistence, the MVDDS commenters' submissions make clear that they lack a coherent vision regarding the 5G service they propose to operate. This is notable for two reasons. First, MVDDS commenters fail to make a public interest case for the rule changes they seek. The purported 5G service they envision would only reach a tiny fraction of the U.S. population and would be subject to technical limitations that would greatly inhibit its utility. Indeed, the assumptions they make regarding technical parameters render impossible many of the public interest benefits they promise to deliver. Second, the inconsistent and conflicting statements made by MVDDS commenters make it all the more difficult to model the interference environment in the 12 GHz band and determine the technical parameters that would be required to ensure the protection of incumbent DBS services.

As AT&T has made clear in its past filings, *if* the Commission chooses to adopt an expanded terrestrial allocation in the 12 GHz band, it would need to wipe the slate clean and start from scratch. This would entail relocating *all* incumbent operations out of the band and compensating them commensurate with the investments they have made in the band thus far. In other words, the Commission cannot conclude that the 12 GHz band may support 5G unless it also concludes that existing uses would no longer be accommodated and must instead be cleared from the band consistent with precedent. Once the Commission does so, it would be able to auction new terrestrial rights, rather than merely gifting them to one set of co-primary⁴ incumbents, as some have proposed. Not only would this be the cleanest and most logical approach for the Commission to take if it allocates the 12 GHz band for 5G, but it is also the

⁴ DBS, NGSO, and MVDDS services are authorized on a co-primary basis, though the latter two services are allocated on a non-harmful interference basis with respect to DBS. *12 GHz NPRM* at ¶ 3.

approach required by law, notwithstanding claims by the MVDDS commenters that the Commission should gift them vastly expanded license rights without conducting an auction.

Finally, the Commission cannot proceed to the adoption of rules at this time for two key reasons. First, the *12 GHz NPRM* did not propose any actual rules and resembles a Notice of Inquiry rather than a Notice of Proposed Rulemaking. The Commission therefore would violate the Administrative Procedures Act (“APA”) if it proceeded directly to the adoption of rules without first proposing rules and offering the opportunity for notice and comment on their text. Second, the incumbent MVDDS licenses are in legal limbo because the Commission has not yet determined whether the substantial service showings filed two years ago by the MVDDS incumbents are sufficient. It would be highly illogical for the Commission to make decisions regarding the future of the 12 GHz band without first addressing this threshold question.

II. THE COMMISSION CANNOT PROCEED WITHOUT VIOLATING ITS SELF-IMPOSED ‘HIPPOCRATIC PRINCIPLE’

The Commission has styled this proceeding to ensure that, above all else, its actions must cause no harm to incumbent services already operating in the 12 GHz band (particularly DBS, which has been given the highest priority under the rules).⁵ Commenters have commended the Commission for its approach, akin to the “Hippocratic principle,” noting that the focus of this proceeding is rightfully placed on protection of licensees from harmful interference and ensuring the continuation of the “vital” services they provide to U.S. customers.⁶ And, indeed, incumbent

⁵ *12 GHz NPRM*, ¶ 2.

⁶ Comments of Intelsat License LLC, WT Docket No. 20-443, at 2 (filed May 7, 2021) (“Intelsat Comments”) (“In light of these existing uses, the Commission affirms that it will be guided in this proceeding by the Hippocratic principle and focus on protecting incumbent licensees from harmful interference.”); *see also* comments of the U.S. Chamber of Commerce, WT Docket No. 20-443, at 2 (filed May 7, 2021) (“the current DBS and NGSO uses of the Band

satellite operators have made their positions clear. SES submits that “[r]equests for revisions to the 12 GHz rules that would undermine incumbent satellite operations for the benefit of terrestrial uses must be rejected.”⁷ Intelsat correctly argues that “[i]f existing, fundamental conclusions about co-frequency incompatibility are to be altered . . . it is imperative that the interference potential between 5G transmitters and satellite receivers first be carefully thought through and analyzed. To do otherwise would jeopardize valuable incumbent uses.”⁸

Even parties who support the introduction of new terrestrial services in the 12 GHz band as a general principle agree that it cannot come at the expense of incumbent satellite services. For example, CCA encourages the Commission to “carefully evaluate the record in this proceeding, and *if* the record establishes that the 12 GHz band *can be used* for terrestrial wireless broadband deployment *while protecting* co-frequency satellite offerings against harmful interference, it should update its rules accordingly.”⁹ Similarly, Starry “supports . . . protecting incumbents from harmful interference.”¹⁰ While AT&T no doubt disagrees with these commenters as to the feasibility of preserving incumbent rights while expanding terrestrial use of the band, it is notable that even they acknowledge that incumbent protection is a threshold issue.

are vital to ensuring all Americans are connected to the 21st century digital economy and it is in the public interest that these uses be protected against harmful interference.”).

⁷ Comments of SES S.A., WT Docket No. 20-443, at 3 (filed May 7, 2021) (“SES Comments”).

⁸ Intelsat Comments at 3.

⁹ Comments of Competitive Carriers Association, WT Docket No. 20-443, at 1 (filed May 7, 2021 (“CCA Comments”) (emphasis added).

¹⁰ Comments of Starry, Inc., WT Docket No. 20-443, at 1 (filed May 7, 2021) (“Starry Comments”).

As Intelsat correctly notes in its comments, there is a “threshold question posed by the Commission in the NPRM—whether a new or expanded terrestrial Mobile allocation in the 12 GHz Band could be added without causing harmful interference to incumbent licensees[.]”¹¹ Based on the record before the Commission, the answer “appears to be ‘no.’”¹² AT&T agrees, and this fact alone should end the instant inquiry.

III. PROPONENTS OF NEW TERRESTRIAL USES HAVE FAILED TO DEMONSTRATE THAT THESE SERVICES CAN COEXIST WITH INCUMBENT DBS SERVICES IN THE 12 GHZ BAND

As both the Commission and numerous commenters in this proceeding have made clear, those who support the addition of terrestrial mobile services to a band primarily used by incumbent satellite operations bear the burden of demonstrating that such sharing is feasible, or at least appears feasible enough to justify further inquiry.¹³ The record before the Commission does not support the significant changes to the 12 GHz band sought by MVDDS commenters and their allies. In fact, several proponents of new terrestrial rights in the 12 GHz band simply ignore DBS and/or the interference threat posed to it by expanded terrestrial use of the band,¹⁴ or

¹¹ Intelsat Comments at 2.

¹² *Id.*

¹³ See Comments of AT&T Services, Inc., WT Docket No. 20-443, at 5 (filed May 7, 2021) (“AT&T Comments”); SES Comments at 6; Intelsat Comments at 5-6.

¹⁴ Comments of the Public Interest Organizations, WT Docket No. 20-443, at 7-8 (filed May 7, 2021) (“Public Interest Organizations Comments”) (supporting expanded terrestrial use but stressing that the Commission must protect NGSOs from interference – and making no mention of DBS).

they merely cite to unsubstantiated, conclusory statements of parties they agree with without conducting any technical analysis of their own.¹⁵

Those commenters who do attempt to engage in a technical debate lean on four lines of argument: (1) the 2016 Peters Studies prove that terrestrial 5G can coexist with DBS in the 12 GHz band,¹⁶ (2) the 2021 RKF Study proves that terrestrial 5G can coexist with NGSO FSS services in the 12 GHz band,¹⁷ (3) DISH’s support of terrestrial 5G in the 12 GHz band “proves” the feasibility of coexistence because otherwise DISH would be arguing against its interests,¹⁸ and (4) the Commission can manage interference in this band by shifting the burden onto DBS incumbents.¹⁹ As explained below, all four arguments fail and should be rejected by the Commission.

A. The MVDDS Commenters Rely on the Highly Flawed Peters Studies Without Offering New Evidence or Rebutting the Numerous Challenges to the Studies’ Validity

When the MVDDS 5G Coalition (the “Coalition”) first raised the question of converting MVDDS licensees’ terrestrial rights (to enable 5G) five years ago, the Coalition based its claims

¹⁵ See, e.g., Joint Comments of INCOMPAS and CCIA, WT Docket No. 20-443, at 8-9 (filed May 7, 2021) (“INCOMPAS/CCIA Comments”). See also, e.g., Letter from Angie Kronenberg, INCOMPAS to Marlene H. Dortch, FCC, WT Docket No. 20-443, at attached press release from the 5Gfor12GHz Coalition (June 29, 2021).

¹⁶ Comments of DISH Network Corporation, WT Docket No. 20-443, at 3 (filed May 7, 2021) (“DISH Comments”); see also Decl. of Tom Peters attached as an appendix to DISH Comments (“Peters Declaration”); Comments of RS Access, LLC, WT Docket No. 20-443, at 45 (filed May 7, 2021) (“RS Access Comments”).

¹⁷ RS Access Comments at 33.

¹⁸ See, e.g. DISH Comments at 4; MVDDS Licensees Comments at 16.

¹⁹ DISH Comments at 71; see also RS Access Comments at 51.

of coexistence on two studies authored by Tom Peters, the Commission’s former Chief Wireless Engineer.²⁰ Despite the fact that AT&T and others have thoroughly rebutted and debunked the Peters Studies’ conclusions, the MVDDS commenters have not offered additional technical evidence but have, in fact, doubled down on the flawed premise and logic of the Peters Studies.

1. The Shortcomings of the Peters Studies Are Well-Established

Over the past year, proponents of permitting MVDDS licensees to offer two-way mobile service have advocated that technological advances now permit two-way mobile terrestrial services to coexist with DBS without causing harmful interference. However, these advocates have not offered any supporting technical evidence to that effect into the docket. Instead, they continue to rely on the contested, flawed Peters Studies from 2016.²¹

Several participants in this proceeding, including AT&T, have explained on the record why the Peters Studies cannot be relied upon to “demonstrate” the ability of DBS and two-way mobile services to coexist in the 12 GHz band *before* the Commission initiated the instant rulemaking. In 2016, SES observed that the Coalition was asserting “point-to-point links can successfully be deployed in the 12 GHz band without interference to DBS based on a single hypothetical path.”²² SES further noted that where other types of terrestrial services were

²⁰ See Tom Peters, “MVDDS 12.2-12.7 GHz Co-Primary Service Coexistence” (June 8, 2016), attached to Comments of the MVDDS 5G Coalition, RM-11768 (filed June 8, 2016); Tom Peters, MVDDS 12.2-12.7 GHz Co-Primary Service Coexistence II (June 23, 2016), attached to Reply Comments of the MVDDS 5G Coalition, RM-11768 (filed June 23, 2016) (collectively, the “Peters Studies” and individually “Peters Study I” and “Peters Study II,” respectively).

²¹ DISH Comments at 43-44; *see also* MVDDS Licensees Comments at 17; RS Access Comments at 45.

²² Reply Comments of SES S.A., RM-11768, at 2 (filed June 23, 2016).

contemplated, the Peters Studies showed “numerous areas where the [EPFD] limits adopted to protect DBS operations would be exceeded.”²³ Intelsat echoed these concerns, observing that the Peters Studies “fail[] to show how [the] proposed new MVDDS operations could be compatible with incumbent DBS services...[where] two out of the three very specific use scenarios discussed in the Stud[ies] showed some harmful interference, and the sole claimed interference-free instance apparently was in a rural area.”²⁴ SES and Intelsat reiterate these critiques in their most recently-filed comments.²⁵

In 2018, AT&T explained that the Peters Studies “too narrowly and simplistically defined the areas in which a DBS receiver could establish a direct line-of-sight path with DBS satellite orbital locations” and as a result “[t]he ensuing EPFD analyses were conducted at an underinclusive set of locations and [thereby] fail[ed] to consider all relevant DBS receivers.”²⁶ AT&T also highlighted the “cherry-picked” areas of study, noting for the Commission the selection of downtown D.C. near Capital One Area (which is not heavily residential) compared to other parts of the city where there are likely to be more DBS receivers, and therefore, more challenging coexistence conditions.²⁷ AT&T further observed how the Peters Studies made a

²³ *Id.*

²⁴ Reply Comments of Intelsat License LLC, RM-11768, at 2-3 (filed June 23, 2016).

²⁵ SES Comments at 6-7 (“[A]s SES and others observed, that study was limited to a few cherry-picked examples and still showed that effective power flux density limits adopted to protect DBS operations would be exceeded.”); *see also* Intelsat Comments at 3.

²⁶ Letter from Michael P. Goggin, Assistant Vice President, Senior Legal Counsel, AT&T Services, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, Docket No. RM-11768, at Appx. A, 1 (June 14, 2018) (“June 2018 AT&T Ex Parte”).

²⁷ *Id.* at Appx. A, 1-2.

variety of assumptions regarding real-world deployments of both DBS and terrestrial mobile services that have no basis in reality.²⁸ Neither the Coalition, DISH, RS Access, nor any other MVDDS incumbent made any effort to substantively rebut AT&T's findings or offer new evidence. Rather: (1) the Coalition perplexingly asserted that its deliberately cherry-picked use cases demonstrated a commitment to interference prevention,²⁹ (2) RS Access simply recited a list of conclusory statements previously made by other parties,³⁰ and (3) DISH made unavailing arguments that further relied on faulty assumptions about DBS deployment.³¹

2. Rather Than Address These Shortcomings, the MVDDS Commenters Have Doubled Down

Despite the substantial challenges to the validity of the Peters Studies that exist in the record, none of the MVDDS commenters or their allies have attempted to substantively rebut the satellite companies' statements regarding the shortcomings of the Peters Studies in their most recently-filed comments. Rather, they have doubled down and, in so doing, further illustrated the invalidity of the Peters Studies.

In its comments, DISH simply ignores the challenges to the efficacy of the Peters Studies, and in lieu of substantively rebutting those challenges or providing new evidence or analysis,

²⁸ *Id.* at Appx. A, 3.

²⁹ Letter from the MVDDS 5G Coalition to Marlene H. Dortch, FCC, RM-11768, at 3 (Aug. 29, 2018) ("Coalition August 2018 Letter"). As AT&T observed at the time, such statements would seem to undermine the Coalition's arguments regarding the potential public interest benefits that could be provided by its proposed service. Letter from Michael P. Goggin, AT&T to Marlene H. Dortch, FCC, RM-11768, at 2 (filed Oct. 16, 2020) ("October 2020 AT&T Ex Parte").

³⁰ Letter from Trey Hanbury, Hogan Lovells US LLP to Marlene H. Dortch, FCC, RM-11768 at 1-3 (Sept. 21, 2020) ("RS Access September 2020 Letter").

³¹ *See* October 2020 AT&T Ex Parte at 3.

supplements its comments with a declaration from Mr. Peters “reaffirming the results of the 2016 studies” and pointing to “subsequent developments” that DISH claims further supports its conclusions regarding coexistence.³² The Peters Declaration reiterates the conclusions of his earlier studies but fails to address the rebuttals submitted on the record by AT&T and the other operators.³³ The Declaration offers only vague generalities that “technology has advanced significantly” since 2016 and observes that armed with these technological solutions “it *may be possible*” for terrestrial licensees to “meet the *current* EPFD restrictions with higher and more powerful base station transmissions.”³⁴ Notably, neither the Peters Declaration nor DISH’s comments provide any evidence of such technology being used in practice, or offer any analytical showing that such technologies can safely coexist with ubiquitously-deployed DBS receivers.

Next, the Peters Declaration proposes to “substantially redefine the scope of DBS operators’ obligations and potential burdens”³⁵ through the creation of a database whereby DBS operators would be required to register and continually update “those specific locations where DBS receivers exist.”³⁶ As a practical matter, this would require the registration of individual subscriber *addresses*, as subscribers are free to move their receivers around their property or mount them on vehicles. This proposal should be rejected for several reasons. *First*, the

³² DISH Comments at 44-45.

³³ Peters Declaration ¶¶ 1-5.

³⁴ *Id.*, ¶¶ 6, 7 (emphasis added).

³⁵ *12 GHz NPRM*, ¶ 23.

³⁶ Peters Declaration ¶ 8.

proposed database of DBS subscriber addresses is customer provided information, as well as commercially sensitive information. Requiring its provision and continual updating would be bad public policy. *Second*, a database of existing DBS customers does not change basic physics: co-channel sharing between highly sensitive satellite receivers and terrestrial transmissions, particularly when mobile, is not viable barring vast geographic protection zones around each of the millions of existing and future satellite receivers, which in turn is not a viable solution when the protected service is ubiquitously deployed nationwide. Commission precedent is clear on this point.³⁷ *Third*, even if the database was updated in real time, mobile terrestrial deployments would need to be modified on an ongoing basis to accommodate new DBS receivers as they are newly deployed or moved. Failure to do so would restrict DBS growth and would be tantamount to a freeze and, hence, would be contrary to basic premise of this proceeding. In sum, DISH's effort to have Mr. Peters supplement his prior studies has only undermined their validity further.

Meanwhile, RS Access contends that the findings in the Peters Studies have been reinforced by a decline in DBS subscribership since 2016 and that "the already low likelihood of interference is now even smaller."³⁸ In so doing, RS Access acknowledges exactly the issue that

³⁷ See, e.g., *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, ¶ 181 (2012) ("*AWS-4 Report and Order*") ("The Commission previously determined that separately controlled MSS and terrestrial operations (i.e., two ubiquitous mobile services) in the same band would be impractical because the parties would not be able to overcome the technical hurdles to reach a workable sharing arrangement. . . . This determination suggested that the public interest would be best served by modifying the 2 GHz MSS license to allow the satellite licensee to operate terrestrial services, rather than make the band available for terrestrial licenses under a sharing regime with MSS. As discussed below, the record demonstrates that the earlier Commission conclusion regarding the impracticality of allowing same spectrum, different operator use of the AWS-4 spectrum remains valid.").

³⁸ RS Access Comments at 47.

DBS operators have been highlighting with respect to the Peters Studies for five years: the studies concede that two-way mobile terrestrial services will cause harmful interference to DBS services in the 12 GHz band. Unfortunately for RS Access, harmful interference is harmful interference, and that is all the *12 GHz NPRM* has sought to identify.³⁹ Today, there are millions of DBS subscribers in the United States, with DBS systems ubiquitously deployed in urban, suburban, and rural settings, and this proceeding is designed to protect these subscribers first and foremost.

In fact, it can be argued that no participant in this proceeding has doubled down on Mr. Peters more than RS Access. RS Access not only leans on the five-year-old, debunked Peters Studies in lieu of making a technical case for coexistence, but it has also retained Mr. Peters' law firm as counsel in this proceeding and Mr. Peters is a co-author of RS Access' comments.⁴⁰ For this reason, Mr. Peters is not an unbiased technical observer, and the Commission should not give any of his recent submissions the weight one would give to a "third party" technical observer – including the declaration he prepared on behalf of DISH in this comment round.⁴¹ The Commission should do the same with any technical study he may submit on this issue in the future, so long as he continues to represent RS Access.⁴²

³⁹ *12 GHz NPRM*, ¶ 2 ("We believe that it is appropriate, however, to initiate a rulemaking proceeding to allow interested parties to address whether additional operations can be accommodated in the band *while protecting incumbent operations from harmful interference...*") (emphasis added).

⁴⁰ See RS Access Comments.

⁴¹ See Peters Declaration.

⁴² DISH Comments at 45 ("Mr. Peters is working on additional studies that will introduce further refinements to the 5G/DBS sharing analysis.").

B. The RKF Study Ignores DBS Altogether and is Rife with Flaws

1. The RKF Study Completely Ignores the Existence of DBS When Modeling the 12 GHz Interference Environment

In its Comments, RS Access finally disclosed its much-anticipated technical study (the “RKF Study”), which purports to prove the central thesis of the Coalition, its members, and its supporters: that terrestrial 5G operations can coexist in the 12 GHz band with incumbent satellite services. Strikingly, the RKF Study completely and deliberately ignores incumbent DBS operations.⁴³ This alone should nullify the study, as there are three co-primary services that operate in the 12 GHz band, and the two that are discussed in the RKF Study must protect the one that is noticeably omitted. Without consideration of the impact on DBS, no changes can be made to the spectrum sharing framework.

2. The RKF Study’s Assumptions and Analysis are Flawed in Numerous Other Respects

Besides the fact that the RKF Study ignores primary DBS services entirely, it is flawed in numerous other respects. Although the RKF Study does not acknowledge or analyze DBS, these other flaws reinforce concerns regarding the viability of a two-way mobile terrestrial service coexisting with incumbent satellite services, including DBS.

First, the RKF Study purports to demonstrate co-existence between the two types of services by assuming the problem away. The RKF model postulates that almost 99% of

⁴³ RKF Engineering Solutions, LLC, *Assessment of Feasibility of Coexistence between NGSO FSS Earth Stations and 5G Operations in the 12.2-12.7 GHz Band*, at n. 4 (May 2021) (“RKF Study”), attached to RS Access Comments (“The feasibility of coexistence with the third co-primary service in the band, the DBS, is not addressed in this study.”).

SpaceX's terminals will be outside of metropolitan areas⁴⁴ and that basically all 5G 12 GHz deployments will be heavily populated areas.⁴⁵ Despite these highly idealized (and unrealistic) assumptions,⁴⁶ the study concludes that the mobile service will nonetheless interfere with almost 1 percent of SpaceX's terminals.⁴⁷ In short, despite artificially assuming vast geographic

⁴⁴ RKF Study at 21 (assuming a mere 1.07% of the terminals in the study are in metropolitan areas—14,621 terminals in Metropolitan RDOF areas won by Starlink and 12,194 terminals in metropolitan areas won by other RDOF auction participants).

⁴⁵ The RKF algorithm for placing macro cells starts with 1 x 1 km tiles that are labeled “urban” and only resorts to tiles designated “suburban” if there is no possible position for an urban placement. Only if there are no urban or suburban placements does RKF ever place a macro base station in a “rural” tile. RKF, of course, nowhere describes the percentage of macro base stations placed in urban, suburban, and rural tile locations, but because urban placements have the smallest inter-cell distance, the overwhelming number of macro cells seem likely to be in “urban” tiles. *See* RKF Study at 31-32.

⁴⁶ To illustrate the absurdity of RKF's modeling, using RKF's intercell distance (“ISD”), the aggregate coverage of RKF's 5G network model (and the service it conceives can be deployed) can be conservatively calculated. AT&T estimates that the network build RKF models covers less than one-half of one percent of the continental U.S. area. Using the largest ISDs for each macro cell morphology, and RKF's assumed “coverage area” for each cell equal to the ISD divided by $\sqrt{3}$, the aggregate coverage of 50,000 “macro cells” and 90,000 “small cells” can be calculated for a range of urban/suburban/rural distributions. These calculations show that the more urban the service, the smaller the aggregate coverage, and even for cell distributions that seem to contradict RKF's deployment assumptions, the coverage of the service—conservatively assuming non-overlapping cells—is nominal. Incidentally, to determine ISD, RKF relies on a publication by the ITU that is more than a decade old and does not contemplate radio bands above 3 GHz. *See* RKF Study at 32 n.57 (stating assumption “that 12 GHz Base stations will be installed on the same towers as the 2 GHz Base stations” and citing ITU-R Rep. M.2135, Guidelines for evaluation of radio interface technologies for IMT-Advanced, International Telecommunication Union, at Table 8-4, <https://bit.ly/3nNVghv>). Although AT&T was unable to resolve the link cited by RKF, AT&T located ITU-R Rep. M.2135, showing a publication date—omitted by RKF—of December 2009 at the ITU's website: https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2135-1-2009-PDF-E.pdf (last visited July 7, 2021).

⁴⁷ The RKF Study assumes that SpaceX will deploy 2.5 million terminals, meaning approximately 25,000 will be interfered into based on this model. RKF Study at 55 (“[T]he potential for Starlink terminals to receive emissions in excess of a nominal I/N value of -8.5 dB will occur in only 0.888% of Starlink terminals deployed over CONUS.”). Despite this significant finding of harmful interference, no attempt is made in the RKF Study or by RS

separation between SpaceX network and mobile deployments, RKF predicts significant harmful interference to incumbent satellite services. In doing so, RKF validates the concerns of AT&T and others on the record that coexistence between weak, ubiquitous satellite receivers and ubiquitous, high-power, two-way, mobile services is unviable. It is also important to note that the assumptions (and hence the results) of this study, even if accurate for NGSO deployments, cannot be extrapolated to apply to DBS.⁴⁸ DIRECTV customers are ubiquitously spread among rural, suburban, and urban areas, and no natural or voluntary geographic segmentation can be assumed between two-way mobile terrestrial services and DBS networks. Any cursory review of urban environments reveals a plethora of installed DBS antennas.

Second, the RKF model is inexorably bound to its view of SpaceX’s Starlink service—including relying heavily on areas Starlink won in the RDOF auction—and therefore by its terms is not broadly reflective of other NGSO FSS deployments, much less other satellite services like DBS.⁴⁹ The RKF model ignores the fact that SpaceX is only one of *six* NGSO operators

Access to address how SpaceX would know where NGSO receivers would be harmed by terrestrial, mobile deployments nor how to mitigate the problem when attempting to install new subscribers in these NGSO “dead zones.” Instead, such significant burden of managing coexistence between the two services would be presumably born entirely by the co-primary NGSO licensee.

⁴⁸ Unlike RKF and RS Access, AT&T will not speculate as to the commercial deployment plans of its competitors, nor whether they would be willing to voluntarily abide by an urban/rural bifurcation to effectuate acceptable distancing measures to facilitate flexible terrestrial use of the 12 GHz band.

⁴⁹ RKF also severely misuses industry terms in describing its simulation. RKF states, for example, that “the study assumes that SpaceX would have a *penetration rate* of 60% in non-metropolitan RDOF areas . . . in which they won funding” and “a 30% *penetration rate* in non-metropolitan RDOF areas . . . where another auction participant won funding.” RKF Study at 17 (emphasis added). In the information technology context, Gartner defines “penetration rate” as the “[n]umber of (mobile) connections to a service divided by the population.” See <https://www.gartner.com/en/information-technology/glossary/penetration-rate-mobile> (last visited July 7, 2021). SpaceX, obviously, will not have an average penetration rate of 30 percent

currently authorized to deploy nationally in the 12 GHz band.⁵⁰ Two others – Kepler and OneWeb – have deployed a significant portion of their respective constellations and Kepler is providing commercial service.⁵¹ RKF also assumes throughout its analysis that all NGSO FSS systems will provide a uniform satellite broadband service using “thousands of satellites.”⁵² Of the six authorized NGSO systems, only one—SpaceX—is authorized to deploy thousands of satellites. The rest operate considerably smaller systems, which RS Access admits “would not then have been compatible with terrestrial services.”⁵³ Additionally, some of the NGSO licensees and grantees provide services other than broadband, such as data services, using significantly smaller constellations and different operating parameters, further undermining the foundational assumptions of the RKF Study.

Third, RKF’s assumptions regarding 5G network parameters are speculative and counter to logic. RKF’s study bounds user equipment (“UE”) antenna height with reference to the antenna downtilt RKF defines in its Table 2-4 for various cell site environments. But the antenna downtilt is merely the half-power bandwidth of the base station, not a hard limit on the

in any significant geographic region, much less 60 percent. What RKF appears to mean instead is that it distributed 60 percent (or 30 percent) of the Starlink terminals it hypothesized in the described regions. This misuse of common term implies a robustness to the simulation of the NGSO FSS service—very high penetration rates—that does not exist.

⁵⁰ 12 GHz NPRM at ¶¶ 15-17.

⁵¹ See Kepler Communications Inc., 2018 Annual Report, Call Sign S2981 (filed June 20, 2019) (disclosing that two satellites launched in 2018 are delivering service).

⁵² RKF Study at 55.

⁵³ RS Access Comments at 39. Moreover, at the time the studies were commissioned in 2016, OneWeb had already filed its initial application for market access and the Commission had established the cut-off date for the Ku/Ka-band processing round. Therefore, constellations with satellites numbering in the several hundreds were already a reality.

geometry that can be served. Even then, because RKF determined that using only the downtilt—in its unsubstantiated view—would “highly overestimate the number of tall buildings,” RKF imposes a further, completely arbitrary constraint that limits UE height to the 6th floor for urban macro cells and the 2nd floor for suburban and rural macro cells. Because RKF’s starting assumption is deploying 5G largely in the most populated dense urban core, the limitation of a 6th floor height is particularly difficult to rationalize. Beyond that, RKF also overstates certain losses for 5G UE, applying an average building entry loss (“BEL”) to 5G UE without recognizing that BEL affects both the desired and undesired signal.⁵⁴ RKF also appears to factor in both BEL and body loss, which further overstates losses. And, perhaps most irrationally, RKF indulges in load modeling that places 10 UEs in every cell—a distribution that seems entirely antithetical to rational network loading assumptions and in complete disregard of the core probability-driven principles of Monte Carlo design.

The RKF Study demonstrates that, even if two-way mobile terrestrial service could technically coexist in the 12 GHz band (a conclusion the record does not support), the allocation would at best result in a highly-constrained patchwork of mobile deployments. Acknowledging this reality, the RKF Study assumes base stations would be located where they can serve 10% of

⁵⁴ In an environment where RKF is assuming the use of transmit power control (“TPC”), BEL will affect not only the interfering signal, but also the ability of the UE to communicate with the base station, so the UE will ramp up power to communicate with the 5G network. *See, e.g., Aloha Partners, L.P. Request for Waiver of 27.60*, 20 FCC Rcd 3744, 3750 (2005) (stating “[w]e find it reasonable that Aloha included a 10 dB factor for signal attenuation to adjust for penetration of structures within which [victim] receivers would be located. . . . [h]owever, we note that Aloha did not include in its study an analysis which affords a 10 dB attenuation for [the desired] signal.”).

a PEA’s population.⁵⁵ Indeed, because RKF “dropped” all of the sites into areas that comprise only 10 percent of the population in each PEA, the network modeled by RKF would cover *at most* 10 percent of the population—a standard that falls far short of the 40-50 percent interim population coverage requirements and the 75-80 percent final population coverage requirements for the types of services using the grid employed in RKF’s model.⁵⁶ As such, the RKF Study grossly underestimates the network deployment necessary for terrestrial 12 GHz licensees to retain their rights on a long-term basis.

Finally, the RKF Study mischaracterizes how satellite networks access and utilize spectrum by suggesting that the other Ku-band segments authorized to SpaceX “provide an operational safe harbor for Starlink users” in the event of harmful interference.⁵⁷ AT&T cannot comment on whether Starlink’s (or any other NGSO’s) network architecture is designed to allow for such dynamic migration. However, even assuming that NGSO networks have this capability to dynamically manage traffic among various bands, DIRECTV’s DBS GSO system does not. Therefore, at best this is an assumption that can only be applied to NGSO incumbents and represents a significant flaw in RKF’s logic.

⁵⁵ RKF Study at 3-4 (“The analysis generates a network of terrestrial base stations across CONUS by placing them randomly in the most densely populated areas comprising at least 10% of the population of each Partial Economic Area (PEA), approximating the siting of a terrestrial 12 GHz network operator’s macro-cell base stations. This model results in a 12 GHz deployment area that includes smaller cities and towns as well as the largest and most populous cities in CONUS.”).

⁵⁶ *Id.*, noting use of 2 GHz towers grid for model; *see also* 47 U.S.C. § 27.14(p)-(v) (describing performance requirements for services between 2 GHz and 4 GHz. Even if all of RKF’s modeled cells were “rural”—the largest cell size—the service would cover, in aggregate, less than 2% of the U.S. geographic area. Of course, that eventuality would conflict with rational deployment assumptions about 5G networks.

⁵⁷ RKF Study at 2.

3. RKF's Study Does Not Meet Legal Standards for Monte Carlo Analyses

Notably, what RS Access submitted in this proceeding is not a Monte Carlo analysis, but rather a summary of one. RKF has elected to provide only curated conclusions about its study, rather than providing the study itself, and therefore the analysis cannot lawfully be relied upon by the FCC.⁵⁸ RKF's submission also falls short of the standard of a Monte Carlo analysis in several respects.

First, RKF claims that its study is statistically significant,⁵⁹ but that claim is neither substantiated nor self-evident. Because the underlying data has not been filed, it is not possible to determine whether the number of iterations conducted by RKF is statistically significant. Even if RKF could establish that the number of iterations provides statistically significant results for its model, that proves only that enough iterations have been run to approximate the cumulative probability distribution defined by the model, not that the cumulative probability distribution accurately reflects reality. Among other reality checks, rigorous Monte Carlo models typically vary input parameter distributions to test the sensitivity of the model to input assumptions—an analysis that RKF omits entirely.

Second, RKF's study is not truly a Monte Carlo analysis. The fundamental rationale for the use of Monte Carlo analyses is to use random draws to understand interactions that involve a

⁵⁸ *American Radio Relay League, Inc. v. FCC*, 524 F.3d 227 (D.C. Cir. 2008); *see also Solite Corp. v. EPA*, 952 F.2d 473, 500 (D.C. Cir. 1991); *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1031 (D.C. Cir. 1978)). If, as RKF claims, the study is “transparent” and “reproducible,” no reason exists to provide only the conclusions, rather than the specific data runs and algorithms.

⁵⁹ RKF Study at 4 (stating that “[b]y simulating a large number of random interference paths *that produce statistically significant results*, the study identifies the likelihood of worst-case interference that could arise under real-world conditions”) (emphasis added).

combination of probability distributions. RKF, however, has modeled only a subset of the probability distributions that are involved in the interaction of a 5G network and a network of NGSF FSS terminals. By selectively utilizing “average” values instead of probability distributions for important parameters, including, among other things, 5G base station antenna height,⁶⁰ building entry loss,⁶¹ body loss,⁶² and user equipment cell site loading,⁶³ RKF is effectively eliminating review of scenarios that involve possible interactions outside some norm that RKF has defined—defeating the purpose of using a Monte Carlo model and making its results highly prone to ends-oriented manipulation.

For precisely these reasons, other Federal agencies have established guidelines for the use of Monte Carlo analyses in rulemaking proceedings—standards RKF fails in virtually all respects.⁶⁴ The Commission thus should reject the RKF Study or, at a minimum, should not accord it the weight it would a true Monte Carlo analysis.

⁶⁰ RKF Study at 32 (defining average values for 5G network antenna height and ignoring the possibility that a particular topology might employ a higher than normal antenna to serve some localized need). This assumption is especially suspect because RKF admits that interference is highly correlated to base station height, stating “[t]he simulation results indicate that the 12 GHz base stations . . . are the dominant sources of interference,” and noting “[t]his is expected since the base stations are higher up from the ground” . . . “and hence can have line-of-sight to the Starlink terminals more often than a UE device would.” *Id.* at 51.

⁶¹ *Id.* at 44 (seemingly utilizing average values for BEL for indoor 5G user equipment (“UE”), instead of the probability distributions recommended in P.2109, which allow for the possibility that an indoor UE might be positioned in front of a window).

⁶² *Id.* at 38.

⁶³ *Id.* at 37-38.

⁶⁴ U.S. Environmental Protection Agency, *Guiding Principles for Monte Carlo Analysis*, EPA/630/R—97/001 (Mar. 1997) (“The Guiding Principles for Monte Carlo Analysis” or “Guiding Principles”), available at: <https://www.epa.gov/sites/production/files/2014-11/documents/montecar.pdf> (last visited July 7, 2021).

C. DISH’s Claimed “Self-Interest” Carries No Weight in Evaluating the Interference Environment

One of the more remarkable arguments that has been advanced in this proceeding is that DIRECTV need not worry about harmful interference from terrestrial, mobile, flexible-use operations because DISH – the largest holder of MVDDS licenses in the country – is also the second-largest DBS provider and would never act against its own self-interest.⁶⁵ The mere thought that DISH’s self-interest would extend to any company other than DISH is laughable, but it is particularly egregious to assume that DISH’s self-interest would protect its largest competitor. AT&T categorically rejects this notion and urges the Commission to dismiss it outright. In any event, the Commission is bound by the Communications Act to make rules based on a scientifically-sound evaluation of the interference environment potentially created by its actions – it is not legally permitted to accept what essentially amounts to a “pinky promise” in lieu of conducting a rigorous technical review.⁶⁶

As an initial matter, DISH’s purported “self-interest” in this proceeding is relatively recent. Before it became a MVDDS licensee, DISH vehemently opposed any expansion of terrestrial rights in the 12 GHz band on the basis that its DBS operations would be irreparably harmed.⁶⁷ Once it acquired a terrestrial foothold and formulated a proposal that would

⁶⁵ DISH asserts in its Comments that “DIRECTV’s use of the band, limited though it may be, is also protected by DISH’s self-interest. The two DBS operators do not have geographically separate clusters of subscribers, and sharing measures on the part of terrestrial service operators that protect one group of DBS subscribers will also generally protect the other.” DISH Comments at 4. *See also* MVDDS Licensees Comments at 16 (“DISH has obvious incentives to deploy spectrum synergistically and not to harm one of its businesses in order to benefit another.”).

⁶⁶ *12 GHz NPRM*, ¶ 21. *See also* 47 U.S.C. § 303(y).

⁶⁷ *See* Opposition of EchoStar Satellite L.L.C., WT Docket No. 07-255 at 2 (filed Dec. 19, 2007) (“Five years later, MDSO seeks to upset the Commission’s balance, and operate at power

significantly enhance the value of its MVDDS licenses, DISH changed its tune. If anything, this suggests that DISH's "self-interest" tilts toward protecting its terrestrial assets, not its satellite service (and associated customers).

Indeed, one need only look at the precedent of the AWS-4 band to see how DISH manages its competing interests. That proceeding provides a preview of how DISH will behave in its own self-interest if it were to hold both satellite and flexible use terrestrial rights in the same band.⁶⁸ AWS-4 should stand as a testament to the pitfalls of granting additional spectrum rights to incumbent licensees who have already failed to make adequate use of existing authorizations.⁶⁹ Unlike AWS-4, in the 12 GHz band there are other incumbent DBS and other satellite operators in the band, and DISH abandoning its satellite operations will not protect them from harmful interference.

levels far higher than contemplated by the Commission's rules. This would have a significant adverse effect on 30 million DBS households nationwide, and should be rejected."); *Ex Parte* filing of DISH Network, WT Docket No. 07-255 (filed May 16, 2008) ("further reduction in DBS service availability caused by heightened interference or any need to modify the installation, size, or maintenance of consumer satellite dishes affects the commercial viability of satellite service.").

⁶⁸ DISH lobbied for a grant of flexible terrestrial rights in the 2 GHz mobile satellite spectrum (MSS) band, arguing that it alone could be trusted to coordinate terrestrial use with the on-going mobile satellite services provided by its subsidiary, Terrestrial. As soon as it received the windfall grants of AWS-4 licenses, DISH folded up the commercial satellite service, and it has yet to offer terrestrial service in the band.

⁶⁹ T-Mobile Comments at 11 ("The AWS-4 proceeding further demonstrates that granting additional rights to incumbent licensees, particularly when they have not made adequate use of their existing spectrum holdings, is contrary to the public interest... The Commission should not make the same mistake again.").

Additionally, the “self-interest” argument assumes that only DISH will be operating a terrestrial service in the 12 GHz band if the Coalition framework is adopted.⁷⁰ This argument ignores the fact that there are seven other incumbent MVDDS licensees who lack their own DBS business and, by extension, the “self-interest” that supposedly will protect incumbent DBS services.⁷¹ It is not clear why DISH is so confident that these seven other licensees will protect DBS operations (including DISH’s) in the absence of any business incentive for them to do so. Unless DISH has an undisclosed degree of control over the other licensees’ operations (or an undisclosed agreement to buy out its seven compatriots), it is unclear how DISH can ensure that its fellow licensees will operate under the same incentives.

As Intelsat has appropriately characterized, “the two DBS providers in the 12 GHz band, disagree as to whether the MVDDS 5G Coalition’s technical studies have demonstrated that mitigation measures...would be sufficient to allow DBS/terrestrial Mobile co-existence in the band...the fact remains that one of the two DBS providers has concluded that the MVDDS 5G Coalition’s proposal would not adequately protect DBS services.”⁷² The bottom line is simple: DISH’s self-interest is divergent from AT&T’s in the 12 GHz band in that it holds both MVDDS and DBS authorizations, and – as any business would – DISH will prioritize the business that advances the interests of its shareholders. While it is not for AT&T to speculate which business

⁷⁰ See, e.g., MVDDS Licensees Comments at 16.

⁷¹ Two of the MVDDS incumbents, Satellite Receivers, Ltd. and MVD Number 53 Partners LLC, contracted with a DISH subsidiary to build out their licenses on behalf and broadcast the same content ostensibly broadcast by DISH. See, e.g. ULS File No. 0008780806, at Exhibit 1 (Satellite Receivers, Ltd.); ULS File No. 0008753668, at Exhibit 1 (MVD Number 53 Partners LLC). Neither licensee filed comments in this proceeding, and the nature of any ongoing relationship these licensees have with DISH is unclear.

⁷² Intelsat Comments at n. 10.

interest will carry the day, it cannot be assumed that DISH supports expanded terrestrial rights in the 12 GHz band because it genuinely believes no harm will be caused to other incumbents.

D. The Commission Should Reject Attempts to Shift the Burden of Interference Management onto DBS Incumbents

Advocates of new terrestrial rights suggest that the Commission could facilitate expanded terrestrial use of the 12 GHz band by making certain technical rule changes that would purportedly protect satellite incumbents. These proposed changes, however, shift the burdens and obligations of interference prevention onto the DBS incumbents -- contrary to the intent of the *12 GHz NPRM* -- and should be rejected.⁷³

DISH, for example, recommends that to protect DBS services from harmful interference while promoting a robust terrestrial service, the Commission should drop its “belt-and-suspenders” approach currently in place and simply require that terrestrial licensees meet specified EPFD levels at each DBS receive earth station location.⁷⁴ DISH makes no effort to explain how terrestrial licensees will know where all DBS earth stations are located (or will be located as new customers subscribe to the service), or how these EPFD limits will prevent mobile transmitters from causing interference into DBS earth stations.⁷⁵ Additionally, DISH makes no effort to explain how newly installed DBS receivers would be protected. RS Access also asks the Commission to adjust the maximum EPFD limit but does not proffer an alternative

⁷³ *12 GHz NPRM*, ¶ 12.

⁷⁴ DISH Comments at 43.

⁷⁵ DISH Comments at 71; *see also* RS Access Comments at 51.

EPFD limit, nor does it explain why such a change is appropriate. The only basis for its argument is that the existing EPFD limit is “very conservative.”⁷⁶

Other parties agree with AT&T that even if coexistence is theoretically feasible, many “traditional” means of preventing interference between two incompatible services are not viable options in the 12 GHz band, and would require DBS incumbents to bear an unacceptable degree of risk.⁷⁷ As Intelsat correctly notes, “exclusion and/or coordination zones are neither practical nor feasible in the 12 GHz band where millions of DBS receivers – which are spread throughout the U.S. and are constantly being added, moved, or relocated—would require protection.”⁷⁸ Similarly, the Dynamic Spectrum Alliance recognizes that even an underlay license regime (where terrestrial services must protect incumbent services) faces a number of challenges including that “DBS has a nationwide footprint” and so too will several of the NGSO FSS providers.⁷⁹

IV. THE MVDDS COMMENTERS LACK A CLEAR VISION FOR TWO-WAY MOBILE SERVICE, UNDERMINING BOTH THEIR COEXISTENCE CLAIMS AND THE PUBLIC INTEREST

Acting Chairwoman Rosenworcel has made clear her vision for America’s 5G future: “The promise of 5G means new and improved services and applications for consumers and businesses alike. This means not only faster download speeds, but also enabling digital tools we can’t even imagine yet... That means a 5G that is fast, secure, resilient, and – most importantly –

⁷⁶ *Id.* at 52.

⁷⁷ AT&T Comments at 9.

⁷⁸ Intelsat Comments at 4.

⁷⁹ Comments of the Dynamic Spectrum Alliance, WT Docket No. 20-443, at 6-7 (filed May 7, 2021) (“DSA Comments”).

available across the country.”⁸⁰ In articulating the purported public interest benefits of expanding the rights of MVDDS incumbent licensees, the MVDDS commenters present a muddy vision for their proposed 5G service that simultaneously appears to fall short of “true” 5G while undermining claims of coexistence. Proponents of new terrestrial rights in the 12 GHz band have stated that a two-way mobile allocation will “promote a viable 5G two-way broadband service” in the 12 GHz band and therefore encourage the Commission to adopt rules “similar to the technical rules applicable to other bands used for 5G, with modifications as needed to ensure co-existence with DBS operations.”⁸¹ However, as AT&T and others have previously noted, under these conditions, the service these licensees purport to provide would fall short of the vision of 5G.⁸²

The MVDDS commenters present somewhat conflicting pictures of what a 5G deployment in 12 GHz will look like.⁸³ While this is not inherently a problem,⁸⁴ it does become

⁸⁰ Press Release, *Acting Chairwoman Rosenworcel Proposes Framework to Free Up Mid-Band Spectrum for 5G* (Feb 23, 2021), <https://docs.fcc.gov/public/attachments/DOC-370205A1.pdf>.

⁸¹ See, e.g., DISH Comments at 71.

⁸² See, e.g., AT&T October 2020 Ex Parte at 4-5; see also Comments of Microsoft Corporation, WT Docket No. 20-443, at 9 (filed May 7, 2021) (“Microsoft Comments”) (stating that no “proponent of expanded terrestrial use of the 12 GHz band has provided any compelling evidence that altering the technical rules applicable to [] MVDDS licenses, which are ill-suited to terrestrial broadband service...would actually result in new 5G deployment activity serving the public interest.”).

⁸³ AT&T assumes that if either Brattle or RKF had mischaracterized RS Access’ intentions/assumptions regarding 5G in this band, RS Access would have said so. Therefore, AT&T attributes the factual assertions made by RKF and Brattle to RS Access.

⁸⁴ Under the Commission’s flexible-use policies, individual licensees are afforded a great deal of leeway to deploy technology in the manner that best suits their user base.

an issue when these assumptions regarding the nature of 5G are being used to support claims of coexistence.⁸⁵ Among the conflicting visions:

- RS Access has stated previously that its 5G services would be limited to fixed, low power deployments in urban canyons or other “unique geographic conditions.”⁸⁶
- DISH continues to rely upon the Peters Studies, which envisioned just three deployment scenarios: fixed point-to-point links, mobile applications in “urban canyons,” and indoor small cells.⁸⁷
- Elsewhere, DISH describes the 12 GHz use case “for smart cities” “to improve traffic management, parking, waste management, and other municipal services” including a “smart electric grid.”⁸⁸ This use case requires a degree of ubiquity that DISH and others have conceded is not possible using the 12 GHz band – having previously acknowledged at one time or another that there will need to be coverage gaps in 12 GHz systems to protect incumbent satellite licensees.⁸⁹
- The RKF Study assumes that a terrestrial service in the 12 GHz band will be primarily an urban one, but that – somehow – no user equipment will operate more than six stories off the ground, a deployment that significantly limits the

⁸⁵ To be clear, AT&T is not suggesting that the 12 GHz band could never support 5G services or that the spectrum inherently lacks merit as a terrestrial band. Rather, the current encumbrances on the band and interference environment, combined with the limited nature of the service promised by MVDDS licensees, make the 12 GHz band a less-than-ideal candidate for 5G in the near term, at least under the regulatory framework supported by the MVDDS commenters and their supporters. *See, e.g.* Microsoft Comments at 18 (“[S]uch a service appears unlikely to succeed commercially and unlikely to contribute significantly to closing the digital divide.”); *see also* Public Interest Organizations Comments at 27 (“Even if the Commission opts to authorize flexible use rights for MVDDS licensees, the need to protect satellite services could require terrestrial much lower power limits than those deployed in other bands employed to support wide-area 5G coverage such as C-band.”).

⁸⁶ Letter from V. Noah Campbell, RS Access to Marlene H. Dortch, FCC, RM-11768, at 7 (June 11, 2020); Reply Comments of the MVDDS 5G Coalition, RM-11768 (June 23, 2016).

⁸⁷ *See* Peters Studies.

⁸⁸ DISH Comments at 25.

⁸⁹ Coalition August 2018 Letter at 3.

ability of terrestrial services to cover urban users and certainly would not facilitate DISH's "smart cities."⁹⁰

- The MVDDS Licensees, by contrast, have highlighted the important role that 5G services could play in "underserved areas," describing their own focus on "expanding access to broadband in rural areas" using "5G Fixed Wireless" radios and other point-to-point technologies. Go Long Wireless has described a point-to-multipoint fixed service that "has been designed both to allow operational conformance with current MVDDS rules and to permit easy adaptation...of 5G capabilities."⁹¹ Go Long does not define what "5G capabilities" mean.
- RS Access has described a 5G network that would utilize 12 GHz frequencies in tandem with lower frequency bands such as the C Band and 2.5 GHz band to manage traffic.⁹² However, only one of the eight MVDDS incumbents (DISH) holds any mobile spectrum, and DISH has not yet built out a network. RS Access' vision for the 12 GHz band would only be possible if it sells or leases its licenses to a third party, calling into serious question whether RS Access ever intends to build a network, which then also calls into question the assumptions regarding network deployment expressed in the Brattle and RKF studies.

Despite all these lofty but somewhat contradictory claims, the submissions of the MVDDS commenters reveal that if granted expanded terrestrial rights, they have no intention of covering all or even a significant percentage of the country. As discussed above, the RKF Study is premised on a threshold coverage level of just 10 percent⁹³ of the population of each Partial Economic Area, and that terrestrial deployments would be concentrated in highly-populated urban areas, potentially leaving the needs of rural communities unmet. The RKF Study also

⁹⁰ RKF Study at 37.

⁹¹ MVDDS Licensees Comments at 10.

⁹² RS Access Comments at 15 ("For example, by allowing mobile operators to assign 12 GHz capacity blocks to users who are close to the cell center, large amounts of capacity delivered by C-band, 2.5 GHz, and Advanced Wireless Service ("AWS") spectrum can be used for the mid-range of the cell, and thus also a greater portion of the low-band spectrum can deliver service closer to the cell's edge.").

⁹³ As discussed above, this likely would not be sufficient coverage to satisfy FCC performance obligations.

assumes that nationwide, just under 2 million (1,949,760) devices can be active on the 12 GHz terrestrial network at any one time.⁹⁴ Meanwhile, the Brattle Study (also submitted by RS Access) posits that “the 12 GHz band mobile 5G broadband deployments that are spread out over the US will be expected to reach 23.8% of the population.”⁹⁵ While this is a higher percentage of the population than that quoted by RKF, it is still a low number that falls short of Acting Chairwoman Rosenworcel’s vision. By contrast, the United States has a smartphone penetration rate of 79.1 percent.⁹⁶

The cumulative technical submissions of the MVDDS commenters make clear that to protect incumbent DBS and NGSO FSS services, there would need to be such significant limitations on the terrestrial side that it would not be possible to deploy any service that could remotely satisfy the Commission’s version of 5G. From their various statements, it is not clear whether the MVDDS commenters truly have no intent of providing service in large swaths of the country, whether they believe there is only a business case for covering a small percentage of the country, or whether they are simply making conservative predictions in service of their interference modeling in the hope the Commission will grant them the relief they seek. In any event, the statements of the MVDDS commenters do not align with the Commission’s vision for

⁹⁴ RKF Study at 38. By comparison, RKF assumes that SpaceX alone will have deployed 2.5 million user devices in the 12 GHz band. RKF does acknowledge that SpaceX has already sought authority for 6 million user terminals in the 12 GHz band and has received authorization for 1 million. RKF Study at 18.

⁹⁵ The Brattle Group, *Valuing the 12 GHz Spectrum Band with Flexible Use Rights*, at 18 (May 7, 2021) (“Brattle Study”), *attached to* RS Access Comments.

⁹⁶ Bankmycell.com, “How many smartphones are in the world?” <https://www.bankmycell.com/blog/how-many-phones-are-in-the-world> (last visited July 7, 2021).

5G or its obligation to ensure the most efficient use of spectrum to advance the public interest. As such, the Commission should reject the Coalition proposal for the 12 GHz band, as it promises little in the way of 5G services but risks irreparably harming DBS and NGSO FSS services.

V. THE 12 GHZ BAND CAN ONLY BE A HOME TO 5G SERVICES IF THE COMMISSION CLEARS THE BAND AND AUCTIONS NEW RIGHTS

The record is clear that any expansion of terrestrial rights in the 12 GHz band would limit the potential and performance of all three services in the band: terrestrial, DBS, and NGSO FSS. An expanded terrestrial service cannot share with the incumbent satellite services in the 12 GHz band without causing interference and/or increasing the burdens on incumbent services. It is for this reason that AT&T opposes a two-way mobile allocation in the 12 GHz band under current conditions. If the Commission determines, however, that the best and most efficient use of the 12 GHz band would be to permit two-way mobile terrestrial service, then the Commission would need to clear the band of *all* incumbents, relocate incumbents, compensate incumbents for their investments and relocation, and auction the 12 GHz band in accordance with Section 309(j).

The 12 GHz band remains critical, central spectrum for the provision of DBS services to its millions of customers throughout the United States. AT&T's statements of fact in the record—that any expansion of terrestrial rights will require the clearing and/or relocation of all incumbents and compensation commensurate with investments and relocation costs—is not a “concession” that the spectrum is “not a vital resource” to AT&T.⁹⁷ Nothing could be further from the truth. Rather, AT&T is explaining in no uncertain terms that introduction of mobile, high-power terrestrial service on a co-primary basis with DBS would harm the quality of service

⁹⁷ MVDDS Licensees Comments at 17.

to millions of DBS subscribers throughout the United States. Should the Commission decide to introduce flexible 5G use in the 12 GHz band, the only option would be to clear and relocate incumbents in a legal, orderly way and with appropriate compensation.

Further, should the Commission determine that a two-way mobile terrestrial service is appropriate in the 12 GHz band, these new rights must be assigned by auction, pursuant to Section 309(j) of the Communications Act, to ensure that spectrum rights go to the party or parties that value it most highly.⁹⁸ Unsurprisingly, the only commenters who disagree with this position are the MVDDS incumbents who self-servingly have proposed an alternative model where, among the many co-primary licensees of this spectrum, they alone would receive flexible-use terrestrial rights – and a windfall. All other commenters recognize that there are multiple co-primary licensees in this band and that a change from a low power, one-way, point-to-multipoint video broadcast license to a two-way, flexible use broadband right is tantamount to an entirely new allocation, rather than a mere license modification.⁹⁹

The Commission should reject the attempt by DISH and RS Access to argue that the Commission’s treatment of Nextel is binding precedent that requires the Commission to gift expanded terrestrial rights to the MVDDS incumbents.¹⁰⁰ DISH and RS Access argue that in the case of Nextel “the nature of the modification did not work a major change because it left Nextel in a ‘comparable position to that which it now occupies’”¹⁰¹ and that their situation is parallel

⁹⁸ 47 U.S.C. § 309(j).

⁹⁹ *See, e.g.*, T-Mobile Comments at 9-13; Starry Comments at 3-4.

¹⁰⁰ DISH Comments at 81; RS Access Comments at 60-61.

¹⁰¹ DISH Comments at 81.

because “MVDDS licensees would also remain subject to similar restrictions on their rights—including having to protect DBS.”¹⁰² *First*, and as discussed at length above, the MVDDS commenters have failed to demonstrate that DBS would be protected if the Commission were to introduce two-way, flexible-use mobile use on a co-primary basis in the band. *Second*, DISH and RS Access confuse what would be meant by a “comparable position.” Were the Commission to review and revise the technical conditions on the existing MVDDS service, that would be a modification of existing rights leaving the MVDDS incumbents in a “comparable position” vis-à-vis the other services in the band. A wholesale change in the services they can offer, however, would be a vast expansion of rights and will have ramifications for other incumbent services in the band, irrespective of the continuing requirement to protect the other co-primary services. In fact, the MVDDS commenters admit as much, noting that the current rules unduly constrain their operations¹⁰³ but that the changes they propose would lead to a sea change in the 12 GHz band.¹⁰⁴

¹⁰² *Id.*

¹⁰³ *See, e.g.*, MVDDS Licensees Comments at 3 (“For fifteen years, MVDDS incumbents have been saddled with rules that limit the services they can provide, to the ever-increasing detriment of the public interest.”); DISH Comments at 43 (“But technical and operational limitations have so constrained these uses of the spectrum that manufacturers have been deterred from developing equipment for the band.”); RS Access Comments at 2 (“The current rules are archaic: they impose severe power limits; require onerous, expensive, and unnecessary coordination efforts; and prohibit two-way mobile communications. After nearly two decades of extraordinary technological advancement, these anachronistic regulations still govern the use of the 12 GHz band and prohibit Multichannel Video Distribution and Data Service (“MVDDS”) licensees from offering robust wireless services to meet the exploding demand for mobile broadband.”).

¹⁰⁴ *See, e.g.*, MVDDS Licensees Comments at 20 (“Even more importantly, with the adoption of those changes, all MVDDS license holders, including the MVDDS Licensees, DISH, and RS Access, will be able to provide new 5G broadband services, particularly in rural areas. The introduction of mobile, two-way terrestrial services via the 12 GHz Band will allow MVDDS incumbents to compete with the likes of SpaceX in service of customers.”); DISH

Put simply, the Commission has a clear blueprint *if* it wants to open up the 12 GHz band for 5G use, and that blueprint was most recently used in the Commission’s C Band proceeding. The most efficient and equitable means of introducing terrestrial mobile services to a satellite band is to first recognize that incumbent satellite services would be irreparably harmed if forced to coexist and to proceed with some combination of relocation and compensation. Once the band is cleared, the Commission would be able to assign new terrestrial rights in the manner that clearly best serves the public interest: by conducting an auction and permitting all interested parties to bid for the new licenses.

VI. THE COMMISSION CANNOT AND SHOULD NOT ADOPT NEW RULES AT THIS TIME

A. The Commission Cannot Adopt Rules It Has Yet to Propose

The *12 GHz NPRM* is a Notice of Proposed Rulemaking in name only. The *12 GHz NPRM* does not propose any rules and consists primarily of open-ended questions regarding the potential use of 12 GHz band. Given this framing, the item is more properly construed as a Notice of Inquiry.¹⁰⁵ In its comments, TechFreedom rightfully observes that while the FCC

Comments at 7-8 (“The 12 GHz band represents a unique opportunity to propel the U.S. to undisputed leadership in the race to 5G. The band contains 500 megahertz of contiguous mid-band spectrum that, if used for terrestrial flexible use (including 5G wireless broadband), could help unlock the full potential of 5G in the U.S. for decades to come.”); RS Access Comments at ii (“Its sheer size—500 megahertz—would allow for the massive channels that 5G demands. Its unique location, between the lower mid-band and millimeter-wave frequencies, would allow operators to bridge the gap in their spectrum portfolios. Just as the ‘golden spike’ in the Nineteenth Century marked the completion of the transcontinental railroad and unlocked massive synergies and economic potential, so too would action in this proceeding unleash the 12 GHz band, allowing operators to seamlessly unite the low-and mid-band with millimeter-wave frequencies into a unified whole.”).

¹⁰⁵ See 5 U.S.C. § 553; *see also* AT&T Comments at n.1 (“Although the Commission has styled this item as a Notice of Proposed Rulemaking, it is more properly construed as a Notice of Inquiry and should be treated as such legally. The Commission has proposed no rules, and it would be inconsistent with the Administrative Procedures Act for the Commission to issue new

enjoys considerable flexibility under the Administrative Procedures Act to configure its rulemaking process as it sees fit, the public may be justly concerned about the potential for rules to be issued without there being any opportunity to comment on the rules' actual form, particularly where complex sharing arrangements are involved.¹⁰⁶

If the Commission wishes to pursue this dialogue further, the logical next step is either to (1) rescind the *12 GHz NPRM* and reissue it as a Notice of Inquiry, as suggested by TechFreedom,¹⁰⁷ or (2) issue a Further Notice of Proposed Rulemaking (without adopting an intervening Order) and afford interested parties the opportunity to comment on fully-baked proposals for use of the 12 GHz band. Then, and only then, could the Commission equitably and legally proceed with the adoption of any new rules regarding the 12 GHz band.

B. The Commission Should Defer Further Action in This Proceeding Until it Addresses the MVDDS Substantial Service Showings

Both the Commission and several commenters have noted the considerable lack of deployment by the MVDDS incumbents under their current authorizations.¹⁰⁸ As such, it would

rules at this juncture.”); Comments of TechFreedom, WT Docket No. 20-443, at 2 (filed May 7, 2021) (“TechFreedom Comments”) (“[T]he Commission should have issued a Notice of Inquiry. The instant NPRM does not set forth any actual rules on which comments are sought. Because many of these questions involve critical engineering analysis, as well as policy decisions, it is impossible for commenters to provide the analysis necessary to move from here to actual rules.”).

¹⁰⁶ TechFreedom Comments at 5; Pub. L. No. 79-404, 60 Stat. 237 (1946) (codified as amended at 5 U.S.C. § 551 et seq.).

¹⁰⁷ TechFreedom Comments at 6.

¹⁰⁸ *12 GHz NPRM*, ¶ 40, n.114; see also T-Mobile Comments at 10; Comments of OneWeb, WT Docket No. 20-443, at 23-35 (filed May 7, 2021) (“OneWeb Comments”); Comments of Space Exploration Holdings, LLC, WT Docket No. 20-443, at 8-18 (filed May 7, 2021) (“SpaceX Comments”).

be nonsensical for the Commission to put the cart before the horse and make sweeping policy decisions regarding the 12 GHz band, potentially jeopardizing the commercial operations of two other incumbent services, before acting on the pending substantial service showings filed by the MVDDS incumbents.

Every current MVDDS license is the subject of a pending substantial service showing initially filed between July and September of 2019. Commission acceptance of these substantial service showings is a precondition of these licenses remaining valid. If the Commission denies any of these buildout showings, the license in question will be terminated as of its respective 2019 substantial service deadline as a matter of law.¹⁰⁹ Today, these MVDDS licenses share a status akin to that of Schrödinger’s cat: they can be thought of as simultaneously valid and invalid, their fate tied to an uncertain event.¹¹⁰ There are several indications in the record that there may be trouble ahead for the MVDDS incumbents with respect to their substantial service showings, and thus the Commission should resolve these issues *before* any further action is taken with respect to the 12 GHz band.

¹⁰⁹ *In the Matter of Requests of Three Licensees of 22 Licenses in the Multichannel Video and Data Distribution Service for Extension of Time to Meet the Final Buildout Requirement for Providing Substantial Service Under Section 101.1413 of the Commission’s Rules*, Order, 33 FCC Rcd 10757, ¶ 4 (2018) (“In 2014, the ten licensees of the 191 licenses requested extensions of the final, 10-year deadlines and license renewals, which the Bureau granted . . . The Bureau also granted the 191 license renewal applications subject to the following condition: ‘If the licensee fails to meet its substantial service obligations (as defined in 47 CFR § 101.1413) by the [2019] buildout deadline date appearing on [each] license, the authorization terminates automatically (in whole) without specific Commission action’”); *id.* at ¶ 14 (“The Licensees have failed to justify a waiver or extension of time to meet the April 3, 2016, construction requirement applicable to 22 MVDDS licensees under Section 101.1413 of the Commission’s Rules. We therefore deny the above-captioned Extension Applications and declare that the 22 licenses automatically terminated on April 3, 2016.”). *See also* 47 C.F.R. § 1.946(c).

¹¹⁰ *See* “Schrödinger’s Cat,” at https://en.wikipedia.org/wiki/Schr%C3%B6dinger%27s_cat (last visited July 7, 2021).

As an initial matter, two years is an exceptionally long time for construction notifications to remain pending before the FCC. As noted above, the MVDDS incumbents filed a total of 191 buildout notifications in the summer and early fall of 2019, all of which remain pending as of July 2021. By comparison, licensees of lower and upper 700 MHz licenses filed buildout notifications for 677 licenses since the beginning of 2019, and the vast majority of licenses – 608 of them – have had their buildout notification processed by now.¹¹¹ One commenter points to “potential inaccuracies” contained in the substantial service showings, noting that these showings “have, in some cases, been supplemented or amended multiple times.”¹¹² When combined with the Commission’s exceptionally long (and ongoing) review process, this gives rise to further cause for concern.

Most seriously, in its comments SpaceX raises substantial allegations with respect to DISH’s performance of its buildout obligations, including whether it is honestly advertising its purported MVDDS service;¹¹³ whether DISH’s pricing structure is designed to dissuade customers from signing up;¹¹⁴ whether its employees are discouraging customers from signing up

¹¹¹ Based on a ULS search conducted on June 1, 2021 of buildout notifications filed since January 1, 2019 for licenses with service codes WU, WY, or WZ.

¹¹² OneWeb Comments at 24, 26.

¹¹³ SpaceX Comments at 11 (“SpaceX has further sought to determine whether and where in DISH’s license areas a consumer could seek to sign up for MVDDS service on DISH’s apparently concealed webpage, and has been unable to locate any address at which DISH’s website returns a positive result for such an inquiry.”).

¹¹⁴ *Id.* at 11-12 (“For instance, DISH claims to require a site survey before it will provide a service that costs \$2.99. A nearly identical free service is available without a site survey. Or, the customers could sign up for a service for \$3.99 that provides a single camera pointed at the customer’s door, providing a live stream of the door that could not be accessed outside the house or recorded for later viewing. Most telling, both of these services required the customers to pay up to \$400 for the equipment for this useless service.”).

for service;¹¹⁵ and whether it is actually providing service to more than “a handful” of customers.¹¹⁶ The allegations raised by SpaceX cast significant uncertainty on whether DISH has properly met its buildout obligations, and whether the Commission will permit DISH to keep its licenses.

Were the Commission to deny the substantial service showings of one or more of the remaining MVDDS licensees, the impact on this proceeding would be considerable. Seven of the eight MVDDS licensees would lose their foothold in the 12 GHz band and, presumably, would be far less interested in the 12 GHz band as a 5G band. Were the eighth licensee, DISH, to lose its licenses, one would expect its priorities to change significantly, as it would only be a DBS incumbent and not a terrestrial wireless incumbent.¹¹⁷ A question as fundamental as “are current MVDDS licenses legally valid?” cannot be ignored while the Commission contemplates potentially major changes to the 12 GHz band.

VII. CONCLUSION

The record developed in opening comments makes clear that the Commission has properly made protection of incumbent services its top priority in this proceeding. Because proponents of expanded terrestrial use of the 12 GHz band have once again failed to meet their burden of proof and make a sufficient technical case for their proposed rule changes, the

¹¹⁵ *Id.* at 12 (“And when a DISH representative did contact a customer, the representative seemed to try to talk customers out of purchasing the service, acknowledging that the requisite equipment would make the tester’s house look like ‘Mickey Mouse’ and saying that only a handful of people around the country had actually signed up for the service.”).

¹¹⁶ *Id.*

¹¹⁷ Indeed, based on DISH’s submissions made before it acquired MVDDS licenses, one would expect DISH to reverse its position again and strenuously argue *against* the expansion of terrestrial services in the 12 GHz band in the event its terrestrial rights were revoked.

Commission should not proceed further. In addition, the terrestrial service envisioned by the MVDDS commenters would fall short of the Commission's 5G goals while causing significant harm to incumbent operations. Rather than proceed down this path, the Commission should maintain the status quo in the 12 GHz band and continue to prioritize satellite services.

Respectfully submitted,

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